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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY

FOREST INSECT INVESTIGATIONS

MEMORANDUM FOR SUPERINTENDENT GLACIER NATIONAL PARK
Re: Douglas fir beetle infestation St. Mary's Lake

by
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For information of
Mr. Keen

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MEMORANDUM FOR SUPERINTENDENT GLACIER NATIONAL PARK
Re: Douglas fir beetle infestation St. Mary's Lake

On August 29th an examination was made of the Douglas fir beetle (Dendroctonus pseudotsugae) infestation in Douglas fir within the St. Mary's Lake drainage. The purpose of this examination was to determine if the institution of control through the utilization of E. C. W. labor would be a feasible procedure and satisfactory results secured. A boat, with outboard motor, was secured at St. Mary's, and a trip made to the head of the lake and return. A number of stops were made to examine the different spots of infestation, which were easily located by the red foliage of dead trees. This proved to be a very satisfactory manner of making this examination, as a splendid view was obtained of both mountain sides, and the different infested areas were examined with a minimum of time.

It is apparent that throughout the Douglas fir stands on the east side of the Park an outbreak of the Douglas fir beetle exists which can not be considered as a normal condition. This infestation is apparently heavier along the south shore of St. Mary's Lake, which may be an actuality or an assumed condition, as this area is more easily viewed than the flatter, less accessible regions. This situation is not an extremely serious one, nor is it expected that severe depredations will occur. However, there are large numbers of trees being killed each season, which will continue until such time as the outbreak is checked by artificial or natural means. The Douglas fir occurs mostly in mixture with other species, and there are few pure stands, which accounts, no

doubt, for the spotted character of the infestation and offers more assurance that widespread devastation will not occur. However, in the St. Mary's Lake area there is sufficient Douglas fir to carry a rather severe outbreak and to seriously mar the attractiveness of the area were it to be destroyed. The infestation is scattered throughout the entire area, with a somewhat heavier concentration along the Red Eagle Divide. There are also several large groups of red-tops to the immediate northeast of St. Mary's, along St. Mary's ridge in the Indian Reservation. As stated, spots of infestation will, no doubt, be found scattered throughout the entire Douglas fir forest in the general vicinity of St. Mary's Lake.

A number of groups of infested trees were examined, and while in some the infestation was found to be dying out, in others there were as many 1933 attacks as there were red-tops (1932 attacks). In one group a very marked increase in the number of 1933 attacks was recorded. To forecast the future of this outbreak is indeed an uncertain, and with our present knowledge, an almost impossible procedure. From the evidence at hand, which showed that in several areas this outbreak was dying down, one could easily draw a conclusion that but little additional damage would result from the general outbreak. However, such a conclusion might not prove to be true.

The origin of this infestation is impossible to determine. Throughout the range of Douglas fir within the Rocky Mountains, Douglas fir beetles are always present, and the spots of infestation could have originated locally through the creation of conditions favorable for the

rapid multiplication of these insects. Such favorable conditions could result from a few windfalls, or slash from cutting areas, etc. On the other hand, it is not beyond reason to assume that a flight of beetles from some infested area adjacent could have settled into the drainage. However, we do know that the infestation has been present within the St. Mary's drainage for at least four years, as one can easily trace the attacks back to that point. Regardless of the origin, the infestation now seems to be decidedly local in character, with no evidence of the infestation being maintained by flights of insects from other areas. This position is supported by the fact that the spots where the infestation has died out with no or little emergence from the 1932-attacked trees, there are no 1933 attacks, while in other areas where a normal emergence occurred, new attacks were found adjacent.

Under present conditions the institution of artificial control measures, if carefully and thoroughly performed, should give satisfactory results. Control measures should be instituted this fall, as spring control against this insect is not feasible, and the project should be sufficiently broad to include all of the infestation in the immediate vicinity of the St. Mary's Lake drainage. The infestation within the Indian Reservation should by all means be included in this project. It is regretted that an estimate of the number of 1933-attacked trees requiring treatment can not be given. Such data could only have been secured from a rather thorough strip survey of the area, and time was not available for such an intensive examination, which would have required several days. In planning for the institution of control, the

number of spotting crews which will be required can, of course, be determined by the size of the area to be covered. Treating should start with a small organization, which can subsequently be increased as the number of trees to be treated would indicate. It is expected that there will be from 300 to 500 trees to be treated in connection with this project; however, it must be remembered that there is no basis for this estimate and in reality it is but a guess. In the event that control measures are instituted, the following rules should be observed:

SPOTTING

The importance of spotting can not be over emphasized, as it is the first and most important task of all control projects. It is often erroneously assumed that the presence of red-tops can be used as a guide to the location of new attacks and that it is not necessary to cover the entire area. This is a very doubtful procedure, and will not locate the new spots of infestation with no discolored foliage which constitute the greatest danger to the success of the project.

1 - The spotting organization recommended for this project would be six-man crews, though any organization which results in the thorough covering of the area is satisfactory. Such six-man crews consist of a chief spotter, 1 compassman, and 4 spotters. The compassman runs compass, paces the distance traveled, and constructs a rough map of the area covered, showing the location of the trees marked for treatment. The four spotters work two on each side of the compassman, and are each responsible for the examination of all trees on a strip one chain in

width. The chief spotter keeps behind the spotters, and is responsible for the alignment of his organization, the correct marking of trees for treatment, and in fact the entire activity of the crew. In this way he is able to properly supervise the work of the men, and it is only from efficient chief spotters and adequate supervision that effective spotting can be secured.

2 - As there are many variations of foliage discolorations, spotters must not attempt to use red or sorrel-tops as a guide for marking. The base of every tree on their strip must be actually examined for the presence of brown boring dust caught in the crevices of the bark. If this dust is present, bits of bark must be removed to determine if live brood of the Douglas fir beetle is present. These insects will be, for the most part, in the new adult stage, though there will be a few trees showing larvae and pupae. Care must be exercised to avoid the improper marking of trees for treatment.

3 - Infested trees should not only be marked with a tag on which is written the tree number but a blaze should be made on the opposite side on which the same number is placed with heavy marking crayon. This additional mark requires but little extra time, and affords an opportunity to relocate the trees if the tags are accidentally, or otherwise, removed.

4 - In the marking of infested trees consecutive numbers should be used for each group, as it is an aid to the treating crew foreman in determining if all trees have been treated. This can be accomplished by the compassman or chief spotter assigning a number to each infested tree as called for by the spotters.

5 - Spotters should be equipped with rather heavy hand axes, as Douglas fir bark is heavy and difficult to remove.

6 - Tags should be at least 3 x 5" in size, and of a bright color easily seen by the treaters. Tags should be tacked to the trees with two tacks, one in each upper corner. Each tag should have in addition to the tree number the initials of the spotter.

TREATING

1 - Infested trees must be felled, the bole, up to a 6" top or higher if infested, cut into logs, placed in decks and burned.

2 - Stumps should be as low as convenient and subsequently peeled.

3 - Decks must be carefully constructed in order to insure good burns.

4 - Care must be exercised in the location of decks in order to avoid scorching of green trees adjacent.

5 - If decks are not burned as constructed, each one should be numbered and tagged, and a rough map constructed, or notes taken, showing their location. It is only from such a method that one can be assured that all decks will be subsequently treated.

6 - Decks must not be fired and then left, as they will often burn out and poor treatment results.

7 - In some instances where poor burns have occurred, the unburned logs have been subsequently peeled. It has been found that peeling is not entirely effective against this insect. Therefore, such condition should be avoided by proper decking and thorough burning.

8 - Treating crew foremen are responsible for the proper treating of all trees, and tags from treated trees are turned in each night to the camp manager as a check against the spotters' records.

SUPERVISION

It has been found from rather sad experiences that too much supervision can not be given to control projects. This supervision must be constant and adequate, and must mean more than just a perfunctory examination.

RECOMMENDATIONS

Though, as stated, the present status of the Douglas fir beetle infestation in the vicinity of St. Mary's Lake is not an extremely serious one, there can be no doubt that unless checked additional timber losses will follow. The severity of these losses is difficult to foresee, though due to the mixed timber types of the area it is not expected that a serious blemish to the natural beauty of the Park will occur. However, in viewing these situations we have been led from experience, as a matter of safety, to assume a pessimistic position. Therefore, in view of the scenic values at stake, with the relatively small number of trees to be treated, it would seem that the institution of artificial control as a means of preventing the occurrence of a devastation comparable to that which has occurred in the McDonald Creek drainage would be a justifiable procedure. Though I have taken the liberty of offering my reaction to the justification of this project, it would seem that such a decision should rest with Park officials, who are far better qualified to pass judgment on such problems. Therefore,

in recommending this project I have considered its entomological phases only. The data secured now indicate that the institution of control for the suppression of this bark-beetle outbreak would be a feasible procedure, and that satisfactory results should be secured.

Respectfully submitted,

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Entomologist

September 1, 1933.